IT INSTITUTE CURRICULUM

Engr Khurram Mahmood

SIGMA ONLINE TRAININGS

AL-MUNAWAR
CLOUD CAMPUS

CAREER POSSIBILITIES

IT Managers
T : 1.5 years
C : All

Data Engineer
T : 4 months
C : (6)

Software Engineer
T : 9 months
C : (1, 3, 4)

BI Analyst
T : 6 months
C : (6 + Visulization tool certification)

Full Stack Developer
T : 14 months
C : (1, 2, 3, 4, 5)

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TIMELINE (UPTO 1.5 YEARS)

3 MONTHS	4.5 MONTHS	3.5 MONTHS	3 MONTHS	2 MONTHS
Programming Language Fundamentals	Data Structures & Algorithms	SQL + Specializations	System Design and Advance Software System Design	Data Engineering

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AREAS OF FOCUS

1. PROGRAMMING LANGUAGE FUNDAMENTALS

- Java
- Data Types and Operators
- Loops and Conditional Statements
- Functions
- Strings
- OOP Concepts

2. DATA STRUCTURES & ALGORITHMS

- Introduction to Maths for programming
- 1D and 2D Arrays
- Introduction to time complexity
- Bit Manipulation
- Introduction to sorting and hashing
- Introduction to Recursion
- Stacks, Linked List, Trees, Tries, and Heaps

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AREAS OF FOCUS

3. SQL + SPECIALIZATIONS

- Full Stack Engineering
  - HTML+CSS+JS
  - Simple Projects
  - API Design, CRUD
  - React + Redux
  - Projects + Mongo
- Backend Engineering
  - Advanced Language Fundamentals
  - Concurrency
- CRUD, Joins, Aggregation, Indexing, Transaction, Advanced SQL

4. SYSTEM DESIGN ESSENTIALS

- CDN
- SQL
- NoSQL
- Caches
- Queues
- Scalability case studies (LLD+HLD)

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AREAS OF FOCUS

5. ADVANCED SOFTWARE & SYSTEM DESIGN

- Zookeeper + Kafka
- Location based Services (S3, Quad Trees)
- Microservices and Containerization (Docker)
- Case Studies.

6. DATA ENGINEERING

- Building efficient data processing Systems.
- Advanced SQL
- Cloud Services – AWS or GCP
- Developing ETL Pipelines
- Map-Reduce Framework
- Big Data
- Data Warehousing & Modeling

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